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APPRENTICESHIP TRAINING

LANDSCAPE GARDENER
Program

Alberta
MANPOWER
Apprenticeship and Trade
Certification Division

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LANDSCAPE GARDENER TRADE

THE GOAL OF APPRENTICESHIP TRAINING

To develop a competent tradesman who, through skill and knowledge, is capable of production, growing, installation, maintenance and sale of plant and related materials and the installation and maintenance of the surrounding landscape.

THE PRODUCT OF APPRENTICESHIP—
a graduate who will:

* Understand and apply the principles of landscape design and construction.

* Construct and install landscape planters, walks and other accessories of various materials.

* Handle orders of plant and related materials.

* Operate and service the tools and machinery as used in the landscape gardener trade.

* Understand and install irrigation systems.

* Understand the operation of a greenhouse, nursery, garden centre and sod production.

* Understand and apply the principles of landscape maintenance-interior and exterior.

* Understand and apply the principles of plant production.

* Understand soil types and plant nutrients.

* Understand and apply in depth knowledge of all pesticides used by this industry.

* Understand and apply knowledge of plant botany and identification.

* Relate to other trades working in the same environment i.e. — paving crews, underground services, heavy equipment operators.

LANDSCAPE GARDENER
APPRENTICESHIP INFORMATION

Basic Requirements:

* Indenture for four periods of Trade experience.

* Attend an eight week technical training course in the first, second, third and fourth period.

* Fulfill the requirements for each period including 1200 hours of work experience exclusive of time spent at the training course; successfully complete the technical training course and obtain a satisfactory employer's report.

* Education — a minimum requirement is the completion of grade 9 or a pass on an equivalent entrance examination as prescribed by the Trade regulation.

* Age — the minimum age for apprentices is 16 years. There is no upper age limit.

Credits:

* Accelerated patterns of apprenticeship may be granted for related technical training and/or experience.

Benefits:

* Apprenticeship is a learning-while-earning program. During the apprenticeship period, while working at the trade, apprentices are assured by regulation of a minimum percentage of the prevailing journeyman rate: 60% during the first period, 70% during the second period, 80% during the third period and 90% during the fourth period. Progress from one rate to the next takes place only after successful completion of all the requirements for each period (details are outlined in the Record Book).

* All apprentices 17 years of age and older are normally eligible for training allowances while attending technical training courses. These allowances are funded by the Canada Employment and Immigration Commission.

* Administrative procedures establishing the amount of training allowance is complex and can vary with an individual's circumstances. Contact a local Canada Employment Centre for details.

* An apprentice who successfully completes the program will graduate with an Alberta Completion of Apprenticeship Certificate and a Certificate of Qualification.

* The most significant benefit to the graduate apprentice is that he is well trained in technical and practical aspects of the trade and is able to make a worthwhile and productive contribution to society. Society in return, will provide an opportunity for livelihood.

DIRECTIONS FOR PROSPECTIVE APPRENTICES

* Contact your nearest Apprenticeship and Trade Certification Division for detailed information and counselling (see list of offices on page 60).

*Obtain an application form from the Apprenticeship and Trade Certification Division and neatly complete, in full, the information requested of the apprentice.

* Persevere in the search for apprentice employment and upon obtaining employment, give the application to the employer. It should be completed and returned to an Apprenticeship and Trade Certification Division forthwith.

*Any time credit, for previous experience in the Landscape Gardener trade, should be discussed with the employer and requested on the application form by the employer.

* Attach to the apprentice application a copy (transcript) of the marks for your last year of school. Applicants who do not have their school transcripts, showing a minimum of grade 9 standing are required to write an entrance examination. If transcripts have been lost, contact Alberta Education for information on school transcripts.

* A contract of apprenticeship is entered into between the apprentice and the employer and should be signed within 90 days after the apprentice application has been approved. If contracts have not been issued within this time, contact the Apprenticeship and Trade Certification Division.

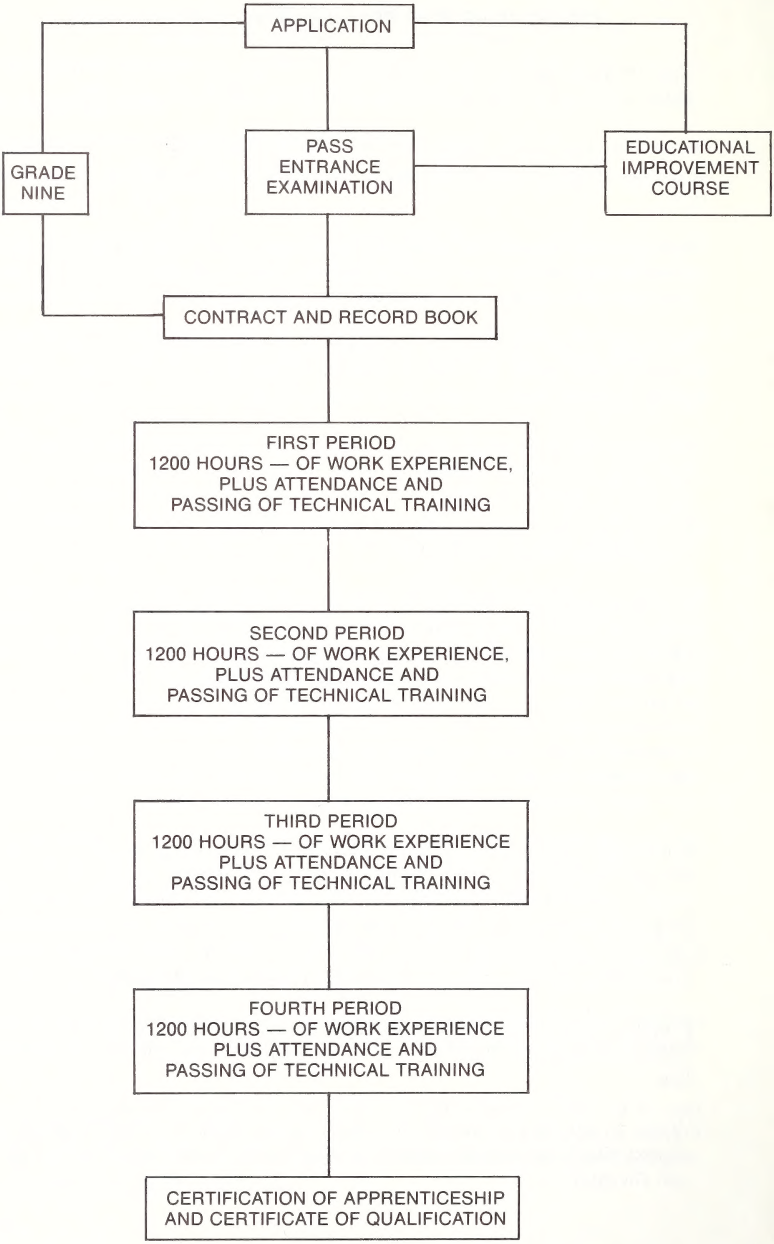
* Before signing the contract of apprenticeship read the complete document carefully — know your obligations and responsibilities to your employer — know the employer's obligations and responsibilities to you — feel confident you have selected the right occupation.

* Know when you will be expected to attend classes and be prepared to attend. In early May of each year, School Schedules are sent to you and your employer. The employer also receives a class selection card for you, which is to be completed and submitted for scheduling. Information on procedures also accompanies the above. Confirmation on the date you actually get scheduled and/or the Official Notice will follow at the appropriate time(s).

* Prepare in advance for the financial obligations required of you during school training. Reference materials and school supplies are paid for by the apprentice.

* While an apprentice, it will be your responsibility to respond promptly to mailed directions and requests from the Apprenticeship and Trade Certification Division.

APPRENTICESHIP ROUTE TOWARD CERTIFICATION


APPLICATION
GRADE NINE
PASS ENTRANCE EXAMINATION
EDUCATIONAL IMPROVEMENT COURSE
CONTRACT AND RECORD BOOK
FIRST PERIOD 1200 HOURS — OF WORK EXPERIENCE, PLUS ATTENDANCE AND PASSING OF TECHNICAL TRAINING
SECOND PERIOD 1200 HOURS — OF WORK EXPERIENCE, PLUS ATTENDANCE AND PASSING OF TECHNICAL TRAINING
THIRD PERIOD 1200 HOURS — OF WORK EXPERIENCE PLUS ATTENDANCE AND PASSING OF TECHNICAL TRAINING
FOURTH PERIOD 1200 HOURS — OF WORK EXPERIENCE PLUS ATTENDANCE AND PASSING OF TECHNICAL TRAINING
CERTIFICATION OF APPRENTICESHIP AND CERTIFICATE OF QUALIFICATION

APPRENTICESHIP COMMITTEE STRUCTURE

Landscape Gardener Provincial Apprenticeship Committee

The Provincial Apprenticeship Committee for the Landscape Gardener Trade is comprised of members from Local Apprenticeship Committees from the cities of Calgary, Red Deer and Edmonton.

This Committee is concerned with the policies that guide the program and make recommendations to the Apprenticeship and Trade Certification Board and the Director of Apprenticeship and Trade Certification Division in the following areas:

* Contribute current information relative to changes in the trade and requirements of industry.

* Make recommendations for changes to existing trade regulations.

* Assist in updating of the training program through recommendations for revisions to the course outline and attendant examinations.

Landscape Gardener Local Apprenticeship Committee

Local Apprenticeship Committees are concerned with individuals and trade situations within a local region. Meetings are held throughout the year to make recommendations and to discuss problems relating to the apprenticeship program. Members who serve on committees are nominated by employer and labour organizations, and membership is equally divided into employer and employee representation in accordance with The Manpower Development Act.

Apprenticeship Committee Members:

Mr. Nigel Bowles — Edmonton — Employer
Mr. Ron Oudyk — Edmonton — Employer
Mr. Austin Smith — Edmonton — Employer
Mr. Bob Andrews — Edmonton — Employer (Alternate)
Mr. Jim Tevelda — Edmonton — Employee
Mr. Kurt Engel — Edmonton — Employee
Mr. Dwayne Edge — Edmonton — Employee
Mr. Fred Kozlo — Edmonton — Employee (Alternate)
Mr. Gary Johnson — Edmonton — Employee (Additional Member)
Mr. Gerry Lettner — Edmonton — Employee (Additional Member)
Mr. Dale Rosene — Red Deer — Employer
Ms. Gloria McGlone — Red Deer — Employer
Mr. Don Hay — Red Deer — Employee (Alternate)
Ms. Jane Huebner — Red Deer — Employee
Mr. Jim Anderson — Red Deer — Employee
Mr. Peter Mountain — Red Deer — Employee (Alternate)
Ms. Jean Webb — Red Deer — Employee (Additional Member)
Mr. Doug Edgelow — Calgary — Employer
Mr. Tony Heuver — Calgary — Employer
Mr. Harold Nicholson — Calgary — Employer (Alternate)
Mr. Lee Smythe — Calgary — Employer (Alternate)
Mr. Al Roscoe — Calgary — Employee
Mr. Mohamed Haji — Calgary — Employee
Mr. Rudy Dold — Calgary — Employee
Mr. Walter Retzer — Calgary — Employee
Mr. Gary McCullough — Calgary — (Additional Member)

LANDSCAPE GARDENER PROGRAM
COURSE OUTLINE

This outline has been prepared in accordance with recommendations from the Provincial Apprenticeship Committee for the Landscape Gardener Trade in the Province of Alberta.

The outline was updated following consideration given to recommendations and suggestions from:

Local Apprenticeship Committees
Representatives from training institutes
Curriculum Sub-Committee from the Provincial Apprenticeship Committee

PROCEDURES FOR RECOMMENDING REVISION(S) TO THE COURSE OUTLINE

Any concerned citizen or group in the Province of Alberta may make recommendations for change by writing to Apprenticeship and Trade Certification Division, Edmonton.

It is requested that recommendations for change refer to specific areas and state references used. Recommendations received will be placed before regular meetings of the Provincial Apprenticeship Committee.

SAFETY EDUCATION

Safe working procedures and conditions, accident prevention and the preservation of health is of primary importance in the Apprenticeship programs in Alberta. These responsibilities are shared and require the joint efforts of the government, employers, employees and the general public. Therefore, it is imperative that all stockholders become aware of circumstances that may lead to injury or harm and that safe learning experiences and environment can be created by controlling the variables and behaviors that may contribute to or cause an accident and/or an injury.

It is generally recognized that a safe attitude contributes to an accident free environment. As a result a healthy safe attitude towards accidents will benefit an employee by helping to avoid injury, loss of time and loss of pay.

A tradesman is possibly exposed to more hazards than any other person in the work force and therefore, should be familiar with the Occupational Health and Safety Act and Regulations dealing with his own personal safety and the special safety rules applying to each job.

LEGAL AND ADMINISTRATIVE ASPECTS

Employer's Responsibilities:

Accident prevention and the provisions of safe working conditions are the responsibilities of an employer. The company is responsible for:

1. The provision and maintenance of safety equipment
2. The provision of protective devices and clothing (as required by the Occupational Health & Safety Act, General Safety Regulations)
3. The enforcement of safe working procedures
4. Adequate safeguards for machinery, equipment and tools
5. Observance of all accident prevention regulations
6. Adequate training to allow a worker to use or operate equipment in an effective and safe manner.

Government's Responsibilites:

The Apprenticeship and Trade Certification Division in conjunction with the respective Provincial Apprenticeship Committee assumes the responsibility to assure that adequate safety is reflected in the curriculum and that adequate safety instruction is presented at the training establishments.

The Occupational Health and Safety Inspection Branch assumes the responsibility for periodic inspection of the operation to ensure that regulations for industry are being correctly observed.

Individual's Responsibilities:

The employee is responsible for:

1. Knowing and working in accordance with the safety regulations pertaining to job environment and
2. Working in such a way as not to endanger himself or his fellow employees

The major factor in safety is the individual employee, his personal attitude toward safety and having an awareness of the respective safety regulation.

LANDSCAPE GARDENER

Subjects and Time Distribution

First Period	8 Weeks 30 Hours Per Week	240 Hours	Page
Section One:	Introduction	17	10
Section Two:	Stock Handling	3	12
Section Three:	Tools and Machinery	30	13
Section Four:	Sales and Communication	100	15
Section Five:	Landscape Construction	30	16
Section Six:	Plant Science	30	21
Section Eight:	Maintenance — Interior	12	23
Section Nine:	Plant Production — Greenhouse	20	24

Second Period	8 Weeks 30 Hours Per Week	240 Hours	Page
Section One:	Stock Handling Procedures	3	25
Section Two:	Tools and Machinery	30	26
Section Three:	Sales and Communication	7	27
Section Four:	Landscape Construction	60	28
Section Five:	Plant Science	10	31
Section Six:	Plant Identification	20	31
Section Seven:	Ground Maintenance — Exterior	50	31
Section Eight:	Pesticides	40	34
Section Nine:	Plant Production	20	40

Third Period	8 Weeks 30 Hours Per Week	240 Hours	Page
Section One:	Sales and Communication	8	41
Section Two:	Landscape Construction	92	42
Section Three:	Plant Identification	40	45
Section Four:	Plant Science	20	46
Section Five:	Maintenance — Exterior	37	47
Section Six:	Plant Production	30	48
Section Seven:	Landscape Construction — Interior	5	49
Section Eight:	Maintenance — Interior	8	50

Fourth Period	8 Weeks 30 Hours Per Week	240 Hours	Page
Section One:	Tools and Machinery	10	51
Section Two:	Sales and Merchandising	8	51
Section Three:	Landscape Construction	115	52
Section Four:	Plant Identification	40	55
Section Five:	Landscape Construction — Interior	5	56
Section Six:	Nursery Production	50	57
Section Seven:	Green Survival	12	58

FIRST PERIOD TECHNICAL TRAINING

SECTION ONE: INTRODUCTION TO REGULATIONS AND SAFETY 17 Hours

A. Introduction 3 Hours

1. Program orientation
   - (a) attendance and deportment
   - (b) reference books, study methods
   - (c) Apprenticeship Liaison Officer

2. The Landscape Gardener Industry
   - (a) role of Federal, Provincial and Municipal Authorities
     - (i) codes
     - (ii) inspections
     - (iii) scope of Landscape Gardener Industry

B. Regulations — O.H. & S. 4 Hours

1. Regulations will be stressed as course is taught Regulations will be observed in shop exercises

2. Study of the Regulations
   - (a) first aid regulations
   - (b) general accident prevention with emphasis on:
     - (i) general safety precautions
     - (ii) housekeeping, personal protective equipment, clothing
     - (iii) guards
     - (iv) grinding
     - (v) operation of power tools and machines
   - (c) construction safety regulations with emphasis on:
     - (i) use of safeguards
     - (ii) ladders
     - (iii) protection from falling materials
     - (iv) excavations, trenching
     - (v) chain saws

3. Guards protecting moving parts

4. Improper use of chemicals

5. Contact with toxic chemicals,
   - (a) fluids
   - (b) materials

6. Handling and storage of combustible materials
   - (a) gases
   - (b) lubricants
   - (c) cleaning fluids
   - (d) starting fluids

7. First Aid
   - (a) emergency procedures — obtaining assistance for injured workmen
   - (b) procedures for obtaining first aid training certification

C. Safety **5 Hours**

1. Identify safety hazards
   - (a) poor housekeeping
     - (i) blocked isles
   - (b) improper start up of machinery
   - (c) horse play and practical jokes
   - (d) loose clothing and apparel
     - (i) necktie
     - (ii) street shoes
     - (iii) rings
     - (iv) watches
     - (v) pendants
     - (vi) other ornamental objects
     - (vii) long hair
   - (e) air quality
     - (i) ventilation
   - (f) water quality
   - (g) open flames
   - (h) storage and handling of gas cylinders
     - (i) properties
     - (ii) properties of natural gas
   - (i) handling and operating electrical equipment
   - (j) operating pneumatic equipment
   - (k) compressed air-hazards

2. Work practices
   - (a) accident reporting procedure
   - (b) identify location of the closest poison control centre to your job location

3. Personal protective equipment
   - (a) protective clothing
     - (i) head protection
       - — hard hat
       - — hard hat liner
     - (ii) eye protection
       - — safety glasses
       - — goggles
       - — full face shield
     - (iii) hearing protection
       - — ear plugs
       - — ear muffs
     - (iv) breathing protection
       - — dust masks
       - — life support systems

        - (v) gloves and apron
        - (vi) safety belts and harness
        - (vii) safety shoes and boots

4. Selection of personal protective equipment
    - (a) selecting specific equipment
        - (i) types
        - (ii) sizes (and what is an acceptable fit)
        - (iii) materials
        - (iv) protective features and limitations
        - (v) application

D. Fire Prevention — 5 Hours

1. Three elements of combustion
2. Basic classes of fires
3. Emergency fire extinguisher for each type in (2) above
4. Fire extinguisher operation
5. Identify fire hazards

SECTION TWO: STOCK HANDLING PROCEDURES — 3 Hours

A. Receiving — 2 Hours

1. Inspection of shipments
    - (a) damaged containers
    - (b) claims procedures
    - (c) handling specially marked containers
2. Packing list procedures
    - (a) shortages
    - (b) factory back orders
    - (c) number of pieces
    - (d) use of suitable records for receipts of shipments
    - (e) proper marking of tags and cards
3. Recognition of items
    - (a) correct identification
    - (b) tagging and marking
    - (c) handling unidentified items
    - (d) accuracy of item counting (especially high count items)
    - (e) sorting procedures
    - (f) importance of correct terminology
4. Recognition and proper use of forms
    - (a) damage and shortage claims
    - (b) entries and signatures
    - (c) customs and brokerage procedures
    - (d) import permits and phyto-sanitary
    - (e) way bills

    - (f) invoices
    - (g) receipts
    - (h) relationship of proper receiving to inventory control
    - (i) determining the paper flow patterns and routine
    - (j) raising debit notes to supplier re: shortages etc.

B. Warehouse Storage Procedures 1 Hour

1. Storage by classification
    - (a) hard goods
    - (b) perishable goods
    - (c) speed of movements
2. Recognition and awareness of advantageous location of specific item for materials in the warehouse
    - (a) item movement considerations
        - (i) fast moving
        - (ii) rotational
        - (iii) seasonal
        - (iv) overstock
    - (b) handling of item considerations
        - (i) bulk
        - (ii) promotional
        - (iii) factory returns
    - (c) proper use of shelves and bins
        - (i) efficiency
        - (ii) safety
        - (iii) protective considerations (height and depth factors)
    - (d) awareness of the effects of climatic conditions on certain material or items
        - (i) humidity and temperature
        - (ii) light fabrics
        - (iii) perishable items

SECTION THREE: TOOLS AND MACHINERY 30 Hours

A. General Engine Servicing 8 Hours

1. Types, function and use of basic mechanics hand tools
    - (a) hammers
    - (b) pliers
    - (c) screw drivers
        - (i) common flat
        - (ii) Phillips
        - (iii) Robertson
    - (d) wrenches
        - (i) open end
        - (ii) box end
    - (e) sockets and handles
    - (f) types, function and use of lubricating equipment
        - (i) hand operated oil and grease guns

- (g) types, function and use of cleaning equipment
  - — air hoses and nozzles
  - — water hoses and nozzles
  - — cleaning solvents
  - — steam cleaning machines
- (h) types of lubricants and their uses

B. Engines — Prior to Starting — 11 Hours

1. Types
   - (a) cooling system
     - (i) air cooled
     - (ii) liquid cooled
   - (b) fuel type
     - (i) gasoline
     - (ii) diesel
     - (iii) propane

2. Design
   - (a) two stroke cycle
   - (b) four stroke cycle

3. Daily maintenance
   - (a) air cooled and liquid cooled engines
     - (i) oil level
     - (ii) air cleaner for cleanliness
     - (iii) cleanliness of cooling fins to air flow
     - (iv) pressurized liquid cooled engine
       - — aeration
       - — cap removal
       - — fluid level and condition
     - (v) refueling
       - — fuel storage
       - — refueling operation (hazards involved)
       - — oil/fuel ratio for two stroke cycle engines
       - — check list and maintenance receipt

C. Engine Start-Up and Operation — 5 Hours

1. Starting methods

2. Battery
   - (a) testing
   - (b) boosting
   - (c) charging
   - (d) loose or corroded terminals
   - (e) sizing

3. Operation
   - (a) oil pressure
   - (b) governor operation
     - (i) idle
     - (ii) underload
     - (iii) over speed

- (c) engine protection devices
  - (i) low oil pressure
  - (ii) over temperature
  - (iii) over speed
- (d) unusual noises

4. Starting aids
   - (a) air inlet heating
   - (b) starting fluids
     - (i) methods of application
     - (ii) hazards

5. Inspection doors and panels in place

D. Engine Shut Down **1 Hour**

1. Importance of observing manufacturer's recommendations for shut down.

E. Attachments **5 Hours**

1. Interpretation of manufacturer's specifications and recommendations for machine/attachment operation
   - (a) fluid types and levels
   - (b) universal joint connection and lubrication
   - (c) operating conditions
     - (i) extreme weather conditions
   - (d) safety guards and covers in place
   - (e) shear pin
     - (i) location
     - (ii) purpose
     - (iii) replacement

SECTION FOUR: SALES AND COMMUNICATION 8 Hours

A. Verbal Communications

1. Accomplishing effective two-way conversation

2. Maintaining effective dialogue
   - (a) basic techniques
     - (i) vocabulary development
     - (ii) proper grammar
     - (iii) voice inflection
   - (b) establishing confidence
   - (c) motivation for dialogue
     - (i) sales motivated
     - (ii) detailed instruction
     - (iii) customer assistance
   - (d) personalities and communication techniques

3. Communication skills in personnel relations (oral and written)
   - (a) effective direction, guidance and supervision
   - (b) adjudication and arbitration situations

    - (c) awareness of employers viewpoints in the hiring process
        - (i) employee criteria (what an employer is really looking for)
        - (ii) when qualifications become secondary to personal attributes

SECTION FIVE: LANDSCAPE CONSTRUCTION 100 Hours

A. Grading 20 Hours

1. Introduction
    - (a) determine equipment to use for cut/fill
    - (b) grid system
    - (c) scales
    - (d) notebooks
    - (e) quantities to be moved
    - (f) cross sections
    - (g) profiles
    - (h) hand tools
    - (i) equipment
        - (i) bobcat, tractors
        - (ii) dozers, trucks (cycle time)
        - (iii) scrapers, buggies (cycle time)
        - (iv) scarifiers, rippers
        - (v) compactors
            - — rollers
            - — vibrators
            - — sheep's foot
        - (vi) graders
    - (j) read grade stakes
    - (k) hand signals

B. Basic Carpentry — Planters 10 Hours

1. Timber stucture (wood construction)
    - (a) estimate
        - (i) quantity and sizes of wood for a project
    - (b) select and use correct tools
    - (c) layout structure
    - (d) excavate and prepare base as required
    - (e) cut and secure components with appropriate fasteners
    - (f) finish surface as required

2. Demonstrate the construction detail for the following products
    - (a) planters
        - (i) attached
        - (ii) freestanding

C. Pre-Cast Units 10 Hours

1. Base preparation
    - (a) sub grade

  (b) sub base
  (c) bedding sand

2. Estimate materials required
   - (a) paver quantities
     - (i) full pavers
     - (ii) edge pavers
       - — full edge
       - — half edge

3. Design considerations
   - (a) traffic classification
     - (i) pedestrian
     - (ii) pedestrian/passenger car
     - (iii) commercial
   - (b) pavers
     - (i) shape
       - — sidewalk
       - — bricks
       - — patio blocks
       - — interlocking
       - — special formed
     - (ii) laying pattern
       - — herringbone
       - — parquet
       - — running

4. Sub grade bearing capacity
   - (a) California bearing ratio (C.B.R.)
     - (i) acceptable ratio for:
       - — traffic classification
       - — drainage
       - — soil conditioners

5. Paver installation
   - (a) manual installation
   - (b) machine installation
   - (c) starting point
   - (d) spacing
   - (e) compacting
   - (f) sanding
   - (g) finished surface variance
   - (h) edge restraint
   - (i) drainage
   - (j) weed control
   - (k) finish around obstacles
     - — manhole covers
     - — trees

6. Other pre cast units and natural stone
   - (a) installation on a prepared base
   - (b) edge treatment

    - (c) finish around obstacles
    - (d) field stone

D. Irrigation — System Components **10 Hours**

1. Pipe material
    - (a) P.V.C.
    - (b) polyethylene
    - (c) aluminum
2. Pipe connections and maintenance
    - (a) fittings available
    - (b) solvent welding
    - (c) fusion welding
    - (d) dresser couplings
    - (e) draining and winterizing
3. Sprinkler Heads
    - (a) selection available
        - (i) shrub (bubblers)
        - (ii) spray
        - (iii) rotary
            - — gear drive
            - — impact drive
            - — cam drive
    - (b) specifications
    - (c) application rate
4. Sprinkler head maintenance
    - (a) nozzles
    - (b) drive mechanisms
    - (c) delivery patterns
    - (d) screens (filters)
5. Specialty irrigation systems
    - (a) greenhouse irrigation components
        - (i) mist spray
        - (ii) drip irrigation
        - (iii) manual
    - (b) travelling systems

E. Planting Methods

1. Transporting & shipping
    - (a) potted materials
    - (b) balled and burlap materials
    - (c) basketed materials
    - (d) bare root stock
2. Interim storage
    - (a) watering
    - (b) climatic factors
    - (c) "heeling in"

    - (d) cold cellar
    - (e) deep dormancy

3. Installation procedures
    - (a) stake locations
    - (b) dig hole
        - (i) size in relation to root ball
    - (c) soil modification
        - (i) peat moss
        - (ii) manure
        - (iii) fertilizer
        - (iv) bone meal
    - (d) remove protective root covering
        - (i) potted materials
        - (ii) balled and burlap materials
        - (iii) basketed
        - (iv) bare root/prune dead, broken roots
        - (v) different techniques in each case (pruning at time of planting)
    - (e) depth of planting
    - (f) staking
        - (i) equipment
        - (ii) methods
    - (g) watering
    - (h) after care
        - (i) general maintenance
        - (ii) pruning — dead or broken branches
        - (iii) protection

F. Seeding (Grasses) — 10 Hours

1. Seed mixes
    - (a) common varieties
        - (i) bluegrass
        - (ii) fescue
        - (iii) crested wheatgrass
        - (iv) rye
    - (b) selection considerations and applications
        - (i) cool and shade
        - (ii) hot and dry
        - (iii) fast and slow, growing varieties
        - (iv) mowing heights
        - (v) disease resistance
        - (vi) lawns, errosion, golf courses
    - (c) fertilizers
        - (i) identifying soil problems
        - (ii) amendments and specific applications
    - (d) water

2. Mechanical dry seeding — lawn construction
    - (a) establishing rough grade
        - (i) drainage

- (b) cultivation
    - (i) purpose
    - (ii) methods
    - (iii) equipment
- (c) incorporation of peat moss, fertilizer, etc.
    - (i) rate of application
- (d) sprinker system — if required
- (e) levelling
- (f) weed control
    - (i) cultural methods
    - (ii) chemical methods
        - — herbicides
        - — pre/post emergence
- (g) incorporation of seed
    - (i) rates of application
    - (ii) methods of application
        - — hand broadcast
        - — drill
        - — hydro
        - — air (helicopter/airplane)
- (h) mulching
    - (i) purpose
    - (ii) types
- (i) side hill techniques
    - (i) errosion control
    - (ii) hydroseeding
- (j) maintenance and care during germination

3. Hydroseeding
    - (a) areas of application
        - (i) industrial sites
        - (ii) slopes and hillsides
        - (iii) roadsides
        - (iv) mine reclamation
    - (b) site preparation
        - (i) contouring
        - (ii) spreading topsoil
        - (iii) harrowing
        - (iv) cat tracking
    - (c) seed mixtures
        - (i) lawns
        - (ii) roadsides
        - (iii) reclamation
        - (iv) errosion control
    - (d) fertilizers
        - (i) soil tests
        - (ii) components
    - (e) mulch
        - (i) purpose
        - (ii) types

- (f) tackifiers
  - (i) purpose
- (g) rates of application
  - (i) variables encountered
- (h) maintenance and care during germination

G. Sodding — 10 Hours

1. Lawn construction
   - (a) establishing rough grade
     - (i) drainage
   - (b) cultivation
     - (i) purpose
     - (ii) methods
     - (iii) equipment
   - (c) incorporation of peat moss, fertilizer, etc.
     - (i) rates of application
   - (d) sprinkler systems — if required
   - (e) levelling
     - (i) fine grading
     - (ii) rolling
   - (f) weed control
   - (g) shipping and handling of sod
     - (i) special considerations
       - — heating, moisture
     - (ii) perishability
   - (h) installation of sod
     - (i) method of installation
       - — level areas
       - — uneven areas
     - (ii) cutting
     - (iii) rolling
     - (iv) watering
   - (i) maintenance and after care to establishment

SECTION SIX: PLANT SCIENCE — 30 Hours

A. Botany — 10 Hours

1. Introduction
   - (a) man's relation to plants
   - (b) definitions
   - (c) scope of industry
     - (i) horticulture on the prairies
     - (ii) status and professionalism

2. Classification
   - (a) terminology
     - (i) botanical
     - (ii) horticulture
     - (iii) trade jargon

B. Soils **20 Hours**

1. Soil textural classes
    - (a) lecture/discussions
        - (i) textural properties related to texture, structure, moisture, nutrients, errosion and handling.
2. Laboratory exercises
    - (a) on-site diagnostic testing with hand texturing method
    - (b) quality control
3. Soil structure
    - (a) lecture/discussion
        - (i) classification of structural types, where found in the profile and significance to horticultural needs
        - (ii) profile designations
        - (iii) soil colour
        - (iv) soil organic matter
    - (b) laboratory exercises
        - (i) diagnostic methods for on-site evaluation
        - (ii) quality control
4. Soil chemistry
    - (a) high lime soil
        - (i) lecture/discussion
            - — theory, extent and significance
            - — cation exchange
        - (ii) laboratory exercises
            - — on-site diagnostic testing
    - (b) soil pH
        - (i) lecture/discussion
            - — theory; mineral and organic tools
        - (ii) laboratory exercises
            - — diagnostic testing with lab and field equipment
    - (c) soil salinity
        - (i) lecture/discussions
            - — theory; causes and reclamation procedures
        - (ii) laboratory exercises
            - — diagnostic testing in the laboratory and in the field

SECTION SEVEN: PLANT IDENTIFICATION 20 Hours

A. Woody Ornamentals (Basic) **20 Hours**

1. Trees
    - (a) relevant characteristics
        - (i) evergreen
        - (ii) deciduous
    - (b) form
    - (c) outstanding features
    - (d) uses
    - (e) evaluation

2. Shrubs
    - (a) relevant characteristics
        - (i) evergreen
        - (ii) deciduous
    - (b) uses
    - (c) evaluations
    - (d) form
    - (e) evaluation

3. Nomenclature

SECTION EIGHT: MAINTENANCE — INTERIOR 12 Hours

A. Basic Groupings According To Needs 1.0 Hours

1. By light requirements

2. By moisture requirements

B. Watering 2.0 Hours

1. Soil moisture

2. Moisture meters vs. feel or touch

3. Misting and syringing

4. Recognizing symptoms

C. Sanitation 1.5 Hours

1. Cleaning foliage — do's and don'ts

2. Leaf and other trash clean-up

3. Trimming and pruning

D. Support 0.5 Hours

1. Staking and tying

2. Guying — not usually necessary

E. Pest Control 7.0 Hours

1. Identification of types
    - (a) insects
    - (b) diseases
    - (c) other

2. Control
    - (a) using pesticides
    - (b) mechanical methods
    - (c) biological control

SECTION NINE: PLANT PRODUCTION — GREENHOUSE 20 Hours

A. Principles and Practices 20 Hours

1. Greenhouse environmental control systems
    - (a) heating
    - (b) ventilating
    - (c) cooling
    - (d) humidity
    - (e) water
    - (f) fertilizer
    - (g) lighting
        - (i) supplementary
        - (ii) photoperiodically
    - (h) CO enrichment
2. Plant handling
    - (a) storage
    - (b) shipping
3. Structures
4. Recognition of Plant Problems
5. Sanitation

SECOND PERIOD TECHNICAL TRAINING

SECTION ONE: STOCK HANDLING PROCEDURES 3 Hours

A. Shipping 3 Hours

1. Proper procedures for the incoming order according to form
   - (a) mail
   - (b) telex
   - (c) telephone

2. Order assembling methods and routines
   - (a) interpretation of prescribed routines and sequences
     - (i) labour and material economics
     - (ii) avoiding unnecessary backorders and duplication
     - (iii) responsibility assignments

3. Sorting of items in relation to packing methods
   - (a) fragiles — marking as such
   - (b) perishables — marked on container and waybill
   - (c) selection of packing methods
     - (i) in relation to transportation method
     - (ii) in relation to duration and type of route
     - (iii) handling frequencies
     - (iv) labelling

4. Recognition and proper use of forms
   - (a) invoices
   - (b) waybills
   - (c) packing lists (slips) — identification of location
   - (d) handling C.O.D. shipments
   - (e) shipping instuctions as to:
     - (i) transportation method
     - (ii) route and distribution points
     - (iii) consignee notification
   - (f) shipment description and labelling
     - (i) "collect"
     - (ii) check-off method 1 of 6, 3 of 7, etc.
   - (g) provision for tracing shipments (shipment logs)

5. Recognition of routing procedures

6. Interpretation of transportation rates and schedules
   - (a) calculation of discounts, totals, weights and measures

7. Safe shipping practices
   - (a) identification labelling
     - (i) fragiles
     - (ii) weight
     - (iii) recommended handling methods (use no hooks) etc
     - (iv) shipping positions (do not stack) etc.
     - (v) perishable (exposure above or below given temperatures)

B. Warehouse Safety Procedures

1. Stacking procedures and precautions
   - (a) flammable, corrosive and toxic fluids (properly marked containers)
   - (b) fragile and perishable
   - (c) interpretation of recognized safety standards and instructions
   - (d) use of guard rails or enclosures when required

2. General safety
   - (a) use of recommended protective clothing and equipment
   - (b) proper venting for batteries and chemicals
   - (c) awareness of other hazards associated with a fire outbreak
     - (i) smoke and toxic gas inhalation
     - (ii) entrapment
     - (iii) failure or delinquent reporting of fire equipment being used

3. Warehouse security procedures
   - (a) importance of established "lock-up" schedules and sequences
   - (b) designation of responsibilities
   - (c) recognition of illegal or forced entry and loss
   - (d) recognition of conditions conducive to illegal entry or theft
     - (i) unrestricted access to attractive merchandise
     - (ii) inadequate locks and security provision
     - (iii) recognition of theft motivations and psychologies
   - (e) special security provision for display cases and areas
   - (f) employee bonding procedures
   - (g) new employees being made aware of employers security policies

SECTION TWO: TOOLS AND MACHINERY 30 Hours

A. Tools, Hand and Power 12 Hours

1. Recognition, the proper use and maintenance of tools
   - (a) measuring, layout and alignment tools
   - (b) squaring, marking tools
   - (c) cutting tools
     - (i) edge
     - (ii) tooth
   - (d) boring, drilling tools
   - (e) securing and assembly tools
   - (f) prying, dismantling tools
   - (g) special purpose equipment
     - (i) sharpening reconditioning
   - (h) a comprehensive review of woodworking machines and powered hand tools with emphasis on safe operation
     - (i) hand electric saw
     - (ii) chain saw
     - (iii) grinders
     - (iv) light and heavy duty drills

B. Machinery Maintenance 9 Hours

1. Sharpening or replacing cutting edges or reels
2. Awareness of proper operation of machinery
   - (a) all adjustments correct
   - (b) unusual noise
   - (c) loose bolts
3. Tire pressures

C. Seasonal Maintenance and Storage 9 Hours

1. Engines
   - (a) cooling systems
   - (b) lubricating system
   - (c) fuel system
   - (d) exhaust system

SECTION THREE: SALES AND COMMUNICATION 7 Hours

A. The Basics of Sales Techniques 7 Hours

1. Importance of personal talents
2. Relations of selling abilities to personal interests
3. Development of effective traits and talents (techniques)
4. Basic sales psychology
   - (a) methods of motivating interest
   - (b) using "objections" to an advantage
   - (c) recognition of the extent and position of the customers relative knowledge and experience (avoiding "talking down to")
   - (d) effective use of the "common interest" factor (i.e. photography, antiques, etc.)
5. Identification of selling requirements
   - (a) confidence
   - (b) effective application of specific situations
     - (i) seasonal situations
     - (ii) particular interest situations
     - (iii) recognition of the potential of casual inquiries
     - (iv) setting up the related sale situation
     - (v) terminating a nonproductive argumentative situation
     - (vi) coping with the "product comparison" situation
     - (vii) fostering the "definite requirement" situation
     - (viii) determining the "hard sell/soft sell" options of approach
   - (c) importance of the basic concepts
     - (i) product knowledge; own and competitors (for comparison only)
     - (ii) modest confidence
     - (iii) pitfalls of extravagant claims

        - (iv) recognition of product (or service) limitations
        - (v) matching the customer to the sale item
    - (d) matching the product and its selling aspects
        - (i) economy
        - (ii) safety
        - (iii) quality
        - (iv) performance
        - (v) appearance
        - (vi) usefulness
        - (vii) durability

6. Recognition of sales leads
    - (a) personnel
        - (i) repeats
        - (ii) referrals
        - (iii) related sale
    - (b) direct inquiries
        - (i) resulting from campaigns
        - (ii) product introduction
        - (iii) product reputation

7. Techniques of "closing" a sale
    - (a) discussion review
        - (i) summary and emphasis
        - (ii) agreement on sales conditions, including warranties or after sales service (or entitlements)
    - (b) advantages of personality factors in closing a sale
    - (c) anticipating sale "closing" difficulties
    - (d) recognition of the difficulties experienced in making decisions
    - (e) equating the value of the sale to the cost of making the sale (man-hour; space and equipment use; demonstration, etc.)

SECTION FOUR: LANDSCAPE CONSTRUCTION 60 Hours

A. Grading 20 Hours

1. Advanced grading (items A to K review of first period material)
    - (a) determine equipment to use for cut/fill
    - (b) grid system
    - (c) scales
    - (d) notebooks
    - (e) quantities to be moved
    - (f) cross sections
    - (g) profiles
    - (h) hand tools
    - (i) equipment
        - (i) bobcat, tractors
        - (ii) dozers, trucks (cycle time)
        - (iii) scrapers, buggies (cycle time)
        - (iv) scarifiers, rippers

        - (v) compactors
            - — rollers
            - — vibrators
            - — sheep's foot
            - — production rates
        - (vi) graders
    - (j) read grade stakes
    - (k) hand signals
    - (l) types of soil
    - (m) bank measure vs. loose measure
        - (i) expansion factors
    - (n) compaction
        - (i) importance of even layers
        - (ii) effects of moisture content

B. Basic Carpentry — Benches 10 Hours

1. Timber structure (wood construction)
    - (a) estimate
        - (i) quantity and sizes of wood for a project
    - (b) select and use correct tools
    - (c) layout structure
    - (d) excavate and prepare base
    - (e) cut and secure components
    - (f) finish surface as required

2. Demonstrate the construction detail for the following product
    - (a) benches

C. Concrete 10 Hours

1. Materials for concrete
    - (a) types of Portland cement
    - (b) uses of various cement
    - (c) concrete aggregates
    - (d) water
    - (e) admixtures

2. Fundamentals of quality concrete
    - (a) selecting materials
    - (b) aggregate tests
    - (c) proportioning
    - (d) concrete tests
    - (e) mixing

3. Concrete theory
    - (a) moisture content
    - (b) curing principle
    - (c) strength
    - (d) reinforcing steel
    - (e) different concrete mixes

4. Estimating materials in Imperial and S.I. measure
    - (a) soil removal

    - (b) forming material
    - (c) base material
    - (d) concrete volume

5. Base preparation
    - (a) sub grade
    - (b) base

6. Tools for horizontal surfaces
    - (a) straight edge
    - (b) hand tamper
    - (c) darby
    - (d) bull float
    - (e) edger
    - (f) jointer or groover
    - (g) power joint cutter
    - (h) hand and power floats
        - (i) hand and power trowels

D. Planting **16 Hours**

1. Field Trips
    - (a) nurseries
    - (b) landscape projects
    - (c) landscape companies

2. Mechanical tree moving

E. Guarantees and Warranties **4 Hours**

1. Supplier's guarantee

2. Contractor's guarantee

3. Garden center/retailer guarantee

4. Better business bureau

5. Government regulations

6. Ethics

7. Insurance claims
    - (a) liability

8. Bonding
    - (a) bid bonds
    - (b) surreties
    - (c) L & M bond
    - (d) performance bond

9. Deposits

10. Holdbacks

11. Inspections
    - (a) C.C.C.
    - (b) F.A.C.

12. Guarantee vs. maintenance

SECTION FIVE: PLANT SCIENCE 10 Hours

A. Botany 10 Hours

1. Review of first period material
2. Plant structure and function (basic)
   - (a) leaves
     - (i) characteristics
   - (b) stems and buds
     - (i) characteristics
     - (ii) types
     - (iii) bud formation
     - (iv) bark
     - (v) functions
   - (c) roots
     - (i) types
     - (ii) characteristics
     - (iii) function
   - (d) flower and fruits

SECTION SIX: PLANT IDENTIFICATION 20 Hours

A. Woody Ornamentals 20 Hours

1. Trees
   - (a) relevant characteristics
     - (i) evergreens
     - (ii) deciduous
     - (iii) form
     - (iv) outstanding features
   - (b) uses
   - (c) evaluation
2. Shrubs
   - (a) relevant characteristics
     - (i) uses
     - (ii) evaluation
3. Nomenclature

SECTION SEVEN: GROUNDS MAINTENANCE — EXTERIOR 50 Hours

A. Soil Management 30 Hours

1. Soil Composition
   - (a) minerals
   - (b) organic matter
   - (c) water
   - (d) air

2. Soil structure
    - (a) granular
    - (b) prismatic
    - (c) massive
    - (d) single grain
    - (e) blockup
    - (f) platy

3. Soil Acidity (pH)
    - (a) sources of soil acidity
    - (b) effect of soil acidity
    - (c) plant tolerance to soil acidity
    - (d) liming acidic soils
    - (e) acidifying alkaline soils

4. Soil compaction
    - (a) courses of soil compaction
    - (b) relieving soil compaction
    - (c) methods and equipment of relieving compaction

5. Turf
    - (a) turfgrass culture and development
        - (i) crown
        - (ii) roots
        - (iii) leaf

6. Types
    - (a) blue grass
    - (b) fescue
    - (c) bent
    - (d) perennial rye

7. Mowing
    - (a) weather effects
    - (b) cutting heights and frequency
    - (c) clippings

8. Thatch
    - (a) causes and effects
    - (b) control of thatch
    - (c) methods of removing
    - (d) control equipment

9. Pest control
    - (a) see pesticide section

10. Water
    - (a) requirements
    - (b) weather effects
    - (c) methods of application
    - (d) application equipment

11. Fertilizing
    - (a) fertilizer effects
    - (b) fertilizer types
    - (c) formulations
    - (d) application rates and frequency
    - (e) application methods

B. Land Management **20 Hours**

1. Land description
    - (a) lecture/discussion
    - (b) laboratory exercises
        - (i) "hands-on" exercises

2. Map use
    - (a) lecture/discussion
    - (b) laboratory exercises
        - (i) topography maps
        - (ii) soil zones
        - (iii) sub-climate zones
        - (iv) soil capability maps
        - (v) air photo use in landscape work
        - (vi) field tour

3. Soil sampling
    - (a) lecture/discussion
    - (b) laboratory exercises
        - (i) use of forms
        - (ii) field work — procedures

4. Introduction to fertilizers
    - (a) lecture/discussion
        - (i) theory and terms
    - (b) laboratory exercises
        - (i) quality control

5. Fertilizer use
    - (a) lecture/discussions
        - (i) properties
        - (ii) selection
        - (iii) guide sheet
        - (iv) safety
        - (v) storage
        - (vi) mixing of various types

6. Laboratory exercises
    - (a) calculations
    - (b) estimates
    - (c) field tour

7. Soilless Media
    - (a) components
    - (b) greenhouse use

- (c) nursery use
- (d) hydroponics

SECTION EIGHT: PESTICIDES 40 Hours

A. Introduction

1. Definition of pest
   - (a) pest groups
     - (i) bacteria
     - (ii) fungi
     - (iii) weeds
     - (iv) insects
     - (v) mites
     - (vi) slugs and snails
     - (vii) nematodes
     - (viii) rodents

2. Pesticide legislation — Federal

3. Pesticide legislation — Provincial

B. Pesticide Formulation

1. Formulated products
   - (a) active ingredient
   - (b) modifier
   - (c) PCP registration number

2. Considerations in selecting appropriate pesticide

3. Solution application
   - (a) water soluble concentrate
   - (b) emulsifiable concentrate
   - (c) dusts
   - (d) granules
   - (e) wettable powders and flowable suspension
   - (f) aerosols
   - (g) poisonous baits
   - (h) fumigants

4. Abbreviations as used on chemical labels describing type of formulation (i.e. AE — aerosol, SP — soluble powder)

5. Adjuvants

6. When to use adjuvants

7. Mixing pesticides

C. Pesticide Toxicity

1. Definition of toxicity
   - (a) LD50
   - (b) LC50

2. Hazards involved

3. Pesticide entry into the body

4. Poisoning symptoms associated with:
   (a) anticoagulants (warfarin)
   (b) bipyridyliums (diquat, paraquat)
   (c) carbamates (carbaryl)
   (d) chlorinated hydrocarbons (chlordane)
   (e) chloro-phenoxy (dicamba, MCPA)
   (f) dithiocarbamates (thiram)
   (g) organophosphates (dimethoate, malathion)
   (h) phosphine compounds (aluminum phosphide)
   (i) pyrethrums
   (j) rotenone
   (k) strychnine

5. Blood test requirements for pesticide applicators

6. First aid for pesticide poisoning

D. Handling, Storage and Disposal of Pesticides

1. Mixing and loading pesticides

2. Disposing of empty containers

3. Clean up of spills

4. Protective clothing and equipment

E. Pesticide Storage

1. Agricultural Chemicals Act Regulation 213/80

2. Pesticide displays in retail outlets

3. Procedures in the event of pesticide spills

4. Procedures in the event of pesticide transportation

5. Procedures in the event of a pesticide fire

6. Who to contact in the event of a pesticide emergency

7. Pesticide disposal for:
   (a) empty containers
   (b) out of date material
   (c) partial containers

F. Pesticide Labels

1. Information on Front Panel

2. Information elsewhere on label

3. Symbol warnings
    - (a) symbol warning for poison hazard
    - (b) flammability hazard
    - (c) explosive hazard
    - (d) corrosive hazard
    - (e) multiple symbol use

G. Insecticides

1. Classes of insecticides by mode of action

2. Insecticide classification by chemical structure

3. "Non-target" insecticide action
    - (a) insecticides and bees
    - (b) pesticides and bee toxicity

4. Insecticide resistance
    - (a) conditions resulting in resistance

5. Insecticide selection
    - (a) insecticide availability
    - (b) toxicity
    - (c) residual activity
    - (d) species control
    - (e) determining insecticide efficacy
    - (f) precautions listed

H. Herbicides

1. Classes of herbicides by mode of action
    - (a) non selective herbicides
    - (b) selective herbicides

2. Residual effects

3. Movement within the plant

4. Method of entry

5. Application timing

6. Factors affecting herbicide efficacy
    - (a) soil applied herbicides (pre-emergent herbicides)
    - (b) soil applied herbicides (post-emergent herbicides)

I. Avoiding "non-target" Damage

1. Soil active herbicides

2. Soil sterilants

J. Pesticide Drift

1. Small liquid droplets

2. Vapour drift (volatilization)

K. Fungicides

1. Fungicides classification
    - (a) mode of action
    - (b) chemical
        - (i) inorganic fungicides
        - (ii) organic fungicides

2. Factors affecting fungicide efficacy
    - (a) pathogen — factors
    - (b) host factors
    - (c) environmental factors

3. Fungal disease control
    - (a) prevention
    - (b) fungicide selection

L. Application Equipment

1. Introduction
    - (a) application requirements

2. Application equipment
    - (a) compressed air sprayers
    - (b) backpack (knapsack) sprayers
    - (c) low pressure boom — type sprayers
    - (d) granular applicators
    - (e) low volume applicators
    - (f) greenhouse fumigation

3. Spray nozzle
    - (a) application
        - (i) advantages and disadvantages of the following types
            - — flat fan
            - — even flat fan
            - — hollow cone
            - — rain drop
            - — solid cone
            - — flooding
    - (b) nozzle sizing
        - (i) volume median diameter (VMD)
        - (ii) droplet size
    - (c) dilution calculations
        - (i) mixing chemicals
            - — by volume
            - — by concentration
    - (d) equipment calibration
        - (i) nozzle volume test
        - (ii) spray test patch

M. Insect Pests of Trees Shrubs and Turf

1. Introduction
   - (a) terminology/definitions
     - (i) alternate host
     - (ii) instar
     - (iii) larvae
     - (iv) nymph
     - (v) parthenogenic
     - (vi) pupae

2. Insect pests of deciduous trees
   - (a) damage caused, characteristics, and control for the following
     - (i) fall cankerworm
     - (ii) forest tent caterpillar
     - (iii) willow shoot-boring sawfly
     - (iv) birch leaf miner

3. Insect pest of coniferous trees
   - (a) damage caused, characteristics and control for the following
     - (i) cooley spruce gall and aphid
     - (ii) yellow headed spruce sawfly
     - (iii) spruce spider mite
     - (iv) spruce needle miner
     - (v) pine needle scale
     - (vi) spruce bud worm

4. Insect pests of shrubs
   - (a) damage caused, characteristics and control for the following
     - (i) lilac leaf miner
     - (ii) aphids
     - (iii) pear slug
     - (iv) raspberry crown borer
     - (v) raspberry sawflies
     - (vi) imported current worm

5. Special application of herbicides for turf management
   - (a) turf grass renovation
   - (b) turf grass retardation

N. Diseases of Trees, Shrubs and Turf

1. Introduction
   - (a) the nature of plant diseases
   - (b) terminology/definitions
     - (i) ascopores
     - (ii) cankers
     - (iii) fruiting bodies
     - (iv) mycelium
     - (v) pycnidia
     - (vi) sclerotia

        - (vii) spores
        - (viii) succulent
        - (ix) water shoots

2. Bacterial diseases
    - (a) damage caused, characteristics and control of the following
        - (i) fireblight

3. Fungal disease of conifers
    - (a) damage caused, characteristics and control of the following
        - (i) needle cast
        - (ii) needle rust
        - (iii) astropellis cankers of pine
        - (iv) shoe string rot
        - (v) western gall rust

4. Parasitic plants affecting conifers
    - (a) damage caused, characteristics and control of the following
        - (i) dwarf mistletoe

5. Canker diseases affecting deciduous trees
    - (a) damage, characteristics and control of the following
        - (i) hypoxlylon canker on aspen
        - (ii) cystopora cankers on poplar
        - (iii) septoria leaf spot and canker on poplars

6. Rot diseases affecting deciduous trees
    - (a) damage, characteristics and control for the following
        - (i) crown rot on elder
        - (ii) trunk rot

7. Other diseases of deciduous trees
    - (a) damage, characteristics and control for the following
        - (i) silver leaf
        - (ii) black knot of cherry
        - (iii) dutch elm disease

8. Vertebrate pests of trees and shrubs
    - (a) damage caused, characteristics and control for the following
        - (i) mice
        - (ii) rabbits
        - (iii) ungulates (deer)
        - (iv) birds

9. Insect pests of turf
    - (a) damage caused, characteristics and control of the following
        - (i) sod web worm
        - (ii) glassy cutworm
        - (iii) white grub
        - (iv) ants

10. Non insect pests of turf
    - (a) damage caused, characteristics and control of the following
        - (i) earthworms

O. Herbaceous Weeds

Reference materials for this section:
— Weeds of Alberta (AGDEX 640-4)
— Guide to Weed Control in Alberta
  Part I — Chemicals (AGDEX 641-9)

1. Introduction
   (a) what is a weed?
2. Seed production and dispersal
3. Seed longevity
4. Vegetative propagation
5. Resistance to control measures
6. Weed identification
7. Classification of plants
   (a) annuals
   (b) biennials
   (c) perennials
   (d) plant structure
8. Weed Control
   (a) prevention
   (b) mechanical control
   (c) chemical control

SECTION NINE: PLANT PRODUCTION 20 Hours

A. Plant Production — Greenhouse 20 Hours

1. Containerization
2. Media
3. Planting and Growing Methods
4. Greenhouse Diseases

THIRD PERIOD TECHNICAL TRAINING

SECTION ONE: SALES AND COMMUNICATIONS 8 Hours

A. Relationship of Salesmanship and Personality 4 Hours

1. What to avoid in the selling occupation
    - (a) defensive attitudes
    - (b) derogatory reference to competitors products
    - (c) stereotyped dialogues
        - (i) "eh?"
        - (ii) "okay?"
        - (iii) "y'know"
    - (d) lack of development of the conversational skills
    - (e) offensive deportment
        - (i) shallow understanding
        - (ii) aloofness
        - (iii) language deficiencies

2. Responsibility of sales staff
    - (a) accountability
    - (b) accessibility
    - (c) stability
    - (d) punctuality

3. Rudiments of selling a service
    - (a) basic knowledge of the problems pertaining to the service area (analysis service, reconditioning service, etc.)
    - (b) depth of follow-up on the sale of a "service"

B. Written Communication Skills and Techniques 4 Hours

1. Warranty reports
    - (a) accuracy of reference material and data
    - (b) brief and clear description of the condition(s)
    - (c) policy or memorandum references
    - (d) positive statement of adjustments carried out

2. Value of planning a written communications
    - (a) setting the objective or intent
        - (i) inquiry
        - (ii) explanation
        - (iii) request
        - (iv) instruction
    - (b) phraseology and slang expressions

3. Organization and execution of written communication
    - (a) recognition and proper use of forms
    - (b) importance of correct emphasis
    - (c) importance of clarity
    - (d) "5w's" plus "how"

SECTION TWO: LANDSCAPE CONSTRUCTION 92 Hours

A. Basic Landscape Design 24 Hours

1. Introduction to design
2. Identification and use of drafting equipment
3. Landscape symbols & lettering techniques
4. Principles of design
    - (a) line
    - (b) form
    - (c) scale
    - (d) texture
    - (e) colour
    - (f) balance
    - (g) seasonability
5. Designing to scale
6. Site planning
    - (a) analyzing the site
        - (i) data gathering
    - (b) measuring the site
    - (c) functional controls
        - (i) climate
        - (ii) noise
        - (iii) visual
        - (iv) physical
    - (d) grading criteria
        - (i) utility
        - (ii) drainage
        - (iii) visual
7. Plant material selection
    - (a) sizing
    - (b) positioning
    - (c) maintenance consideration
8. Working drawings
    - (a) grading plant
    - (b) planting plan and plant list

B. Basic Surveying 20 Hours

1. Introduction to basic survey
    - (a) blueprints and contour maps
    - (b) legal surveys
    - (c) bylaws
    - (d) permits
    - (e) benchmarks
    - (f) locations and elevations of utilities
    - (g) site conditions

    - (h) soil reports
    - (i) water tables
    - (j) excavating practices
        - (i) angle of repose
        - (ii) retaining systems

2. Use of survey equipment
    - (a) level & rod
    - (b) transit
    - (c) hand level
    - (d) string level
    - (e) hydro level
    - (f) batterboard
    - (g) squaring methods
        - (i) 3-4-5
        - (ii) diagonal
    - (h) chains, tapes
    - (i) metric and imperial measure

3. Theory and Use: Site layout
    - (a) locate all points on the site (grid system) property lines
    - (b) establish, calculate and stake out elevations
    - (c) complete cut and fill calculations
    - (d) basic quantity calculations

C. Estimating **20 Hours**

1. Blueprint reading and specification reading
    - (a) quantity take off
        - (i) hardlandscaping — patios, fences, walls planters, benches
        - (ii) soft landscaping — grading, soil, seed sod, plant materials

2. Sources of materials (unit prices)

3. Labour costs

4. Equipment costs

5. Production rates (units/hr)

6. Overhead costs
    - (a) office
    - (b) management
    - (c) yard
    - (d) insurance
    - (e) equipment finance charges (bank payments)

7. Other cost allocations
    - (a) out of town expenses
    - (b) climate
    - (c) competition
    - (d) guarantees
    - (e) bonding

8. Subcontracting

9. Mark up (profit)

10. Feedback
    - (a) during construction
    - (b) after completion

D. Tendering, Contracts, Bonds — 8 Hours

1. Tender Procedures
    - (a) notice of tender
        - (i) invitation
        - (ii) newspaper
        - (iii) negotiation
    - (b) tender deposits
    - (c) establish tender price
    - (d) tender closing process
        - (i) bid bonds
        - (ii) letter of surety
        - (iii) open — close to public
    - (e) letter of intent
    - (f) contract award
        - (i) start up meetings

2. Subcontracts/purchase orders

3. Charge orders

4. Deficiency list and guarantees

5. Construction completion certificate(C.C.C.)

6. Final acceptance certificate (F.A.C.)

7. Release of holdback

E. Basic Carpentry — Fences and Trellis' — 10 Hours

1. Timber structure (wood construction)
    - (a) estimate
        - (i) quantity and sizes of wood for a project
    - (b) select and use correct tools
    - (c) layout structure
    - (d) excavate and prepare base as required
    - (e) cut and secure components with appropriate fasteners
    - (f) finish surface as required

2. Demonstrate the construction detail for the following products
    - (a) fences
    - (b) trellis'

F. Concrete Forming — 10 Hours

1. Fundamentals of the use of a transit and level
    - (a) establishing elevations with a builder's level

    - (b) measuring differences in elevation
    - (c) establishing points on a line with a transit

2. Constructing concrete flatwork
    - (a) preparing the site and placing the concrete
    - (b) finishing the concrete surface
    - (c) finishing air-entrained concrete
    - (d) curing

3. Pouring concrete
    - (a) in hot weather
    - (b) in cold weather

4. Special surface finishes
    - (a) exposed aggregate
    - (b) dry-shake colour
    - (c) geometric designs
    - (d) leaf impressions
    - (e) circle designs
    - (f) swirl designs
    - (g) wavy broom designs
    - (h) keystone

5. Concrete surface defects
    - (a) scaling
    - (b) crazing
    - (c) dusting

SECTION THREE: PLANT IDENTIFICATION 40 Hours

A. Woody Ornamentals 15 Hours

1. Trees
    - (a) relevant characteristics
        - (i) evergreens
        - (ii) deciduous
        - (iii) form
        - (iv) outstanding features
    - (b) uses
    - (c) evaluation

2. Shrubs
    - (a) relevant characteristics
        - (i) uses
        - (ii) evaluation

B. Herbaceous Ornamentals 15 Hours

1. Annuals
    - (a) the bedding plant industry
    - (b) types of annuals
    - (c) cultural requirements

2. Perennials
   - (a) types (identification)
   - (b) use in landscape
   - (c) cultural requirements
   - (d) propagation

C. Turf and Ground Covers — 10 Hours

1. Turf
   - (a) lawn turfgrasses
   - (b) special use grasses
   - (c) cultural requirements

2. Ground covers
   - (a) types
     - (i) woody
     - (ii) herbaceous
     - (iii) deciduous
     - (iv) evergreen
     - (v) native
   - (b) special requirements
   - (c) indoor plants

SECTION FOUR: PLANT SCIENCE — 20 Hours

A. Plant Growth and Development — 20 Hours

1. Life Cycle
   - (a) annuals
   - (b) biennials
   - (c) perennials
   - (d) herbaceous v/s woody materials
   - (e) practical consideration (raspberries Geranium)

2. Plant Processes
   - (a) essential growth requirements
   - (b) growth of plants
     - (i) how and why it occurs
     - (ii) responses
   - (c) developmental changes
     - (i) juvenility
     - (ii) maturity
     - (iii) pinching
     - (iv) flower and fruit dominancy
     - (v) reproduction
       - — sexual
       - — assexual

3. Putting it into practice
   - (a) hardiness
   - (b) micro-climate

    (c) chinook zones
    (d) highway planting

SECTION FIVE: MAINTENANCE — OUTSIDE 37 Hours

A. Turf Amendments 3 Hours

1. effect and needs for amendments
2. top dressing
3. overseeding
4. partical amendments (sand)
5. application methods and equiment

B. Turf Problems 3 Hours

1. low light
2. heat radiation
3. flooding
4. winter injuries
5. traffic

C. Equipment 3 Hours

1. types and usage
2. basic repair

D. Flowers 3 Hours

1. Perennials
2. Annuals
3. area of use
4. bed design
5. planting
6. culture
7. watering
8. fertilizing

E. Ground Covers 3 Hours

1. types
2. usage

3. planting
4. culture

F. Pruning trees and shrubs **19 Hours**

1. Why Prune
   - (a) shaping
   - (b) sizing
   - (c) damage prevention
   - (d) thinning
   - (e) disease prevention
   - (f) tools
     - (i) secatures
     - (ii) loppers
     - (iii) pole pruners
     - (iv) hedge trimmers
     - (v) saws
     - (vi) hydraulic equipment
2. Pruning methods **3 Hours**
   - (a) deciduous trees
   - (b) evergreen trees
   - (c) deciduous shrubs
   - (d) evergreen shrubs
   - (e) hedges
   - (f) pruning fruit producing plants
   - (g) rejuvination

G. Maintenance **3 Hours**

1. Field marking
   - (a) line marking
     - (i) methods
     - (ii) equipment and materials

SECTION SIX: PLANT PRODUCTION 30 Hours

A. Propagation **20 Hours**

1. Sexual
   - (a) seeds
     - (i) pollination
   - (b) seed source
     - (i) hardiness of genetic stock
   - (c) storage
     - (i) viability and testing
     - (ii) storage environment
   - (d) germination
     - (i) scarification
     - (ii) stratification

2. Asexual
    - (a) vegetative
    - (b) clone selection
    - (c) division
    - (d) cuttings
        - (i) hardwoods
        - (ii) semi hard
        - (iii) soft woods
    - (e) layering
    - (f) grafting
    - (g) budding
    - (h) meristematic tip culture

3. Choosing a method of propagation

4. Use of growth regulators

B. Greenhouse **10 Hours**

1. greenhouse crops

2. Scheduling

SECTION SEVEN: LANDSCAPE CONSTRUCTION — INTERIOR 5 Hours

A. Plant Materials **3 Hours**

1. Types
    - (a) specimen
    - (b) understory
    - (c) ground cover

2. Sources
    - (a) origin
    - (b) growers, nurseries
    - (c) availability
    - (d) import regulations

3. Uses — identification by
    - (a) broad groups
    - (b) genera
    - (c) trade classifications
        - (i) container sizes
        - (ii) trade "lingo"

B. Environmental and Growing Considerations **2 Hours**

1. Light
    - (a) natural
    - (b) other
        - (i) various artificial sources

2. Temperature

3. Humidity

4. Growing Media
   (a) water relationships
   (b) air relationships
   (c) physical relationships
   (d) chemical relationships
      (i) salts
      (ii) pH
      (iii) nutrients and fertilizers

5. Western Canadian Conditions — overview of basics

SECTION EIGHT: MAINTENANCE INTERIOR 8 Hours

A. Other Plant Problems 5 Hours

1. Diagnosis
   (a) salts and other similar damage
   (b) fertilizers
   (c) water imbalances including oedema
   (d) externally — caused environmental upsets
      (i) temperature
      (ii) cleaning fluids and compounds
      (iii) sunscald, excess light, lack of light, etc.
      (iv) legginess

2. Solving — recommended procedures
   (a) leaching
   (b) plant rotation
   (c) soil testing — adding chemicals
   (d) adding modifiers
   (e) improving or removing light
   (f) controlling temperature and humidity

B. Weeding 1 Hour

1. Hand control

2. Mechanical

3. Chemical

C. Public Relations 2 Hours

1. Respecting the clients premises

2. Respecting the clients privacy

3. Representing your own firm properly

4. Proper dress and decorum

5. Dealing with those in authority on the job

FOURTH PERIOD TECHNICAL TRAINING

SECTION ONE: TOOLS AND MACHINERY 10 Hours

A. Review First and Second Period Material 10 Hours

1. Safety
   - (a) guards
   - (b) safe repair
     - (i) jacking points
     - (ii) spring loaded components
     - (iii) cutting edges

SECTION TWO: SALES AND MERCHANDISING 8 Hours

A. Merchandising 8 Hours

1. Definition of merchandising

2. Relation of merchandising to
   - (a) inventory planning
   - (b) floor space layout
   - (c) personnel requirements
   - (d) turnover factor
   - (e) seasonal items
   - (f) industry requirements
   - (g) "one-shot" promotions

3. Relation of merchandising to advertising
   - (a) the position of merchandising in an advertising campaign
   - (b) application of the merchandising concept to every P and A transaction; i.e. related sales, realistic suggestions and recommendations

4. Merchandising as an ongoing experience
   - (a) attitudes and appearance of employees
   - (b) condition and location of display areas
   - (c) value of timely and current merchandising themes
   - (d) impact and originality of displays and materials

5. Recognition of item areas where merchandising can be most effective for related sales
   - (a) garden chemicals
   - (b) application equipment
   - (c) tool selection
   - (d) fertilizers
   - (e) seeds

6. Merchandising programs
   - (a) recognition and applications of
     - (i) seasonal sales
     - (ii) new product promotions
     - (iii) end of production sales, etc.

  - (b) recognition of cost factor/potential return aspect
  - (c) recognition of advertising campaigns (public safeguards and protection provisions by legislation)

SECTION THREE: LANDSCAPE CONSTRUCTION 115 Hours

A. Basic Landscape Design 30 Hours

1. Working Drawings
   - (a) construction details
     - (i) decks
     - (ii) fences
     - (iii) benches
     - (iv) shade structures
     - (v) structures
     - (vi) paving
     - (vii) concrete
     - (viii) retaining walls
   - (b) irrigation design
     - (i) principles in landscape design
     - (ii) basic materials
     - (iii) basic methods of installation
   - (c) special types of landscaping
     - (i) residential
     - (ii) shopping centres
     - (iii) public institutions
     - (iv) parks and schools
     - (v) urban renewal
     - (vi) walks, pathways, parking
     - (vii) golf courses
     - (viii) rock gardens
     - (ix) Japanese gardens
     - (x) water gardens and waterfalls
     - (xi) wildflower
     - (xii) reclamation and errosion control

2. Landscape maintenance considerations

3. Landscape lighting

4. Construction budget for the design

5. Preparation of basic specifications and bidding documents

6. Plant material selection
   - (a) sizing
   - (b) positioning
   - (c) maintenance consideration

B. Estimating 10 Hours

1. Blueprint reading
    - (a) quantity take off
        - (i) hardlandscaping — patios, fences, walls, planters, benches
        - (ii) soft landscaping — grading, soil, seed, sod, plant materials

2. Subcontacting

3. Site meetings

4. Feedback
    - (a) during construction
    - (b) after completion

C. Tendering, Contracts, Bonds 15 Hours

1. Alberta Bid Depository System
    - (a) rules and regulations
    - (b) membership

2. Principles of contract law
    - (a) binding contracts
    - (b) legal actions
    - (c) Builder's Lien Act
    - (d) Alberta/Canada Public Works Act

3. Bonding
    - (a) requirements and qualifications
    - (b) bid bond
    - (c) labour and material bond
    - (d) performance bond

4. Insurance
    - (a) liability
    - (b) "Acts of God"
    - (c) fire and theft
    - (d) vandalism

D. Basic Carpentry — Retaining Walls 10 Hours

1. Timber structure (wood construction)
    - (a) estimate
        - (i) quantity and sizes of wood for a project
    - (b) select and use correct tools
    - (c) layout structure
    - (d) excavate and prepare base as required
    - (e) cut and secure components with appropriate fasteners
    - (f) finish surface as required

2. Demonstrate the construction detail for the following products
    - (a) retaining walls

F. Forming For Concrete **10 Hours**

1. Pads
2. Footings
3. Steps
4. Retaining walls
5. Installation of reinforcing steel
    - (a) tension load
    - (b) compression load
6. Installation of
    - (a) manholes
    - (b) catch basins
    - (c) culverts
    - (d) storm sewers and pipes
    - (e) weeping tile
      (as used in Landscape Construction drainage)

G. Irrigation **40 Hours**

1. System Design
    - (a) principles of hydraulics
        - (i) water pressure
        - (ii) surge pressure
        - (iii) friction loss
    - (b) gathering site information
    - (c) system requirements
    - (d) availability of water and power supply
    - (e) system layout
        - (i) main line locations
        - (ii) controller locations
    - (f) equipment selection
        - (i) sizing pipes
        - (ii) sizing valves
        - (iii) sizing remote control wires
        - (iv) controllers
    - (g) finalizing irrigation plan
        - (i) specifications
        - (ii) tools
        - (iii) installation techniques
        - (iv) special details
    - (h) estimating materials
2. Installations
    - (a) irrigation blueprint reading
    - (b) basic irrigation systems
3. Pumping systems
    - (a) pumps
        - (i) centrifugal

        - (ii) vertical turbine
        - (iii) booster
    - (b) selection considerations
    - (c) pressure regulation
    - (d) trouble shooting

4. System component assembly and installation
    - (a) connecting pipes of different types
    - (b) trenching for irrigation systems
    - (c) installing
        - (i) heads
        - (ii) valves
        - (iii) back flow preventers
    - (d) emitter system installation
    - (e) controller and wiring installation
    - (f) backfilling trenches
    - (g) adjusting sprinkler heads

5. Basic Maintenance
    - (a) programming controllers
    - (b) trouble shooting irrigation systems
        - (i) turf
        - (ii) ornamental
        - (iii) drip

SECTION FOUR: PLANT IDENTIFICATION 40 Hours

A. Woody Ornamentals 15 Hours

1. Trees
    - (a) relevant characteristics
        - (i) evergreens
        - (ii) deciduous
        - (iii) form
        - (iv) outstanding features
    - (b) uses
    - (c) evaluation

2. Shrubs
    - (a) relevant characteristics
        - (i) uses
        - (ii) evaluation

B. Herbaceous Ornamentals 15 Hours

1. Perennials
    - (a) types (identification)
    - (b) use in landscape
    - (c) cultural requirements

2. Ground covers
    - (a) types

        - (i) woody
        - (ii) herbaceous
        - (iii) deciduous
        - (iv) evergreen
        - (v) native
    - (b) special requirements
    - (c) indoor plants

SECTION FIVE: LANDSCAPE CONSTRUCTION — INTERIOR 5 Hours

A. Type of Installations 2 Hours

1. Cetria greenhouse

2. Office, commercial, retail

3. residential

4. procedures
    - (a) drainage include syphon tubes
    - (b) specialized layers
    - (c) media
    - (d) planting and handling
    - (e) mulches

B. Types of Plantings 2 Hours

1. Integrated planter beds

2. Individual floor plants
    - (a) planter types, sizes
    - (b) interior design considerations

3. Hanging and credenza plants

4. Non-living
    - (a) silk and other fabric
    - (b) dried and preserved
    - (c) polyethylene and related products

5. Other
    - (a) water plants
    - (b) other specialized plants and plantings

C. Types of Contracts 1 Hour

1. Direct sale

2. Lease and maintenance

3. Guaranteed maintenance (following sale)

4. Lease with buy-out option

5. Short term rentals

SECTION SIX: NURSERY PRODUCTION 5 Hours

A. Field Production (General) 30 Hours

1. field preparation
    - (a) amendments
    - (b) long-term rotations
    - (c) fertilization
    - (d) layout
    - (e) planting
        - (i) machines
        - (ii) care of stock
            - — before planting
            - — during establishment
    - (f) weeds
    - (g) watering
    - (h) fertilization
    - (i) harvesting
    - (j) storage
    - (k) pruning
    - (l) root pruning
    - (m) production schedules

B. Sod Production 10 Hours

1. field preparation

2. seeding

3. culture

4. harvesting

5. shipping

C. Container Production 5 Hours

1. container production
    - (a) containers
    - (b) media
    - (c) potting
    - (d) handling
    - (e) layout
    - (f) drainage
    - (g) watering
    - (h) fertilization
    - (i) shelter (wind)
    - (j) shade
    - (k) storage
    - (l) winter protection
    - (m) production schedules

D. Grading and Shipping of Nursery stock **5 Hours**

1. Maintenance of stock
    - (a) bare root
        - (i) root cellaring
        - (ii) heeling in
    - (b) containers
    - (c) ball and burlap
2. Grading and standards
3. Packing and shipping

SECTION SEVEN: GREEN SURVIVAL 12 Hours

A. Environmental Effects of: **6 Hours**

1. Acid rains
2. Logging
3. Pollution spills
4. Pests
5. Forest fires
6. Ground water pollution

B. Review of: **6 Hours**

1. Government Regulations
2. Organizations other than Government
    - (a) Lanta
    - (b) Landscape Architechs
    - (c) concerned citizen committees

SUGGESTED REFERENCE MATERIALS

TECHNICAL TRAINING SCHOOLS

The Landscape Gardener apprenticeship training program is offered by the Alberta Manpower, Apprenticeship and Trade Certification Division. Staff and facilities for teaching the program are supplied by Alberta Manpower at:

1. Olds College

LOCATION OF APPRENTICESHIP AND TRADE CERTIFICATION DIVISION REGIONAL OFFICES

CALGARY

EDMONTON

FORT McMURRAY

GRANDE PRAIRIE

HINTON

LETHBRIDGE

MEDICINE HAT

PEACE RIVER

RED DEER

VERMILION

N.L.C. - B.N.C.
3 3286 06627332 3

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